

# DUPONT™ TYVEK® BUILDING WRAPS VS. ZIP SYSTEM® WALL SHEATHING

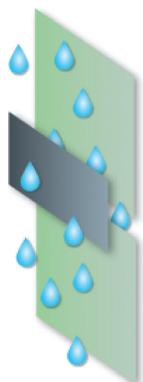
PERFORMANCE: DuPont™ Tyvek® Performs Better

It's virtually impossible, and prohibitively expensive, to build a perfect wall system. So, it is essential to limit the amount of air and water that can enter while increasing the drying rate of the wall assembly. That's why choosing the best available weatherization system is key to a building's durability.

DuPont™ Tyvek® building wraps give you the job-site durability, performance and ease of use needed to help you build more comfortable, longer-lasting and energy-efficient structures. Trusted by building professionals everywhere, DuPont™ Tyvek® building wraps, part of the complete DuPont™ Weatherization Systems portfolio, provide superior overall performance compared to ZIP System® wall sheathing (wood-based sheathing with a water-resistant overlay), as further described in this document.

## REVERSE SHINGLING IS REQUIRED, AND CAN ALLOW MORE WATER TO ENTER IN THE WALL SYSTEM

Contrary to accepted building practices, The ZIP System® wall sheathing's published installation details result in reverse shingling at the heads of windows, doors and other penetrations. This conflicts with Section R703.8 of the 2006, 2009 and 2012 International Residential Code (IRC) and with major window manufacturers' installation details that require flashing to be applied shingle-fashion to prevent water from entering the wall cavity.



ZIP System® taped seams are reverse shingled, which creates additional opportunities for water intrusion.



DuPont™ Tyvek® building wraps with proper overlap shed water away from the wall.

## THE ZIP SYSTEM® CREATES AN EXTERIOR, NON-INSULATED VAPOR BARRIER

To be considered vapor permeable, a WRB must have a vapor permeance of at least 5 perms as tested per ASTM E96 B (desiccant method). Materials with a vapor permeance below these required levels significantly decrease the wall system's ability to dry.

The manufacturer of the ZIP System® claims vapor permeability *for the WRB overlay only*. However third-party laboratory testing of the vapor permeability of ZIP System® wall sheathing with the bonded WRB overlay shows that it has vapor permeability of less than 1 perm, under both wet and dry cup measurement conditions.

Because ZIP System® wall sheathing requires all seams to be sealed with tape, installed ZIP System® wall sheathing constitutes an exterior, vapor barrier. An exterior vapor barrier significantly reduces drying capability of the wall when moisture enters the system. And because it is non-insulated, it can also lead to condensation in the wall from either air exfiltration or vapor diffusion during cold weather.

## ZIP SYSTEM® PANELS MUST BE PROTECTED PRIOR TO INSTALLATION

ZIP System® wall sheathing consists of an oriented strand board (OSB) structural panel with a resin-impregnated Kraft paper overlay. As a result, care must be taken to protect the ZIP System® wall sheathing from moisture prior to installation.

Storage instructions in the ZIP System® installation manual require that the ZIP System® panel bundles must be stored off of the ground and “**covered loosely with a waterproof protective material**”. The manufacturer recommends these covers be anchored on top of the stack but away from the sides and bottom to allow for adequate air circulation. When high moisture conditions exist, the manufacturer also recommends cutting the stack binding to prevent further damage to the swollen panels.

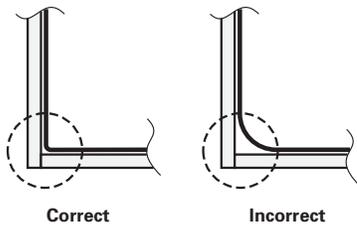
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Failure to take the necessary precautions could result in damage to the panel. When the WRB overlay of the ZIP System® is damaged, the underlying water-sensitive sheathing material is also affected. Do you really want to risk the durability of your next structure on a product that can't be exposed to the weather?

### INSTALLATION CHALLENGES CREATE MORE OPPORTUNITIES FOR FAILURE OF THE ZIP SYSTEM®

The performance of ZIP System® Wall Sheathing as an air and water barrier is dependent on the performance of the taped seams. Proper tape installation is time-consuming, complicated and crucial to the water and air resistance of the system.



Proper taping of inside corners is difficult. If the tape is not fully seated in the corner, it can be stressed or otherwise damaged when the siding is installed.

**Poorly taped seams and corners:** Published ZIP System® installation guidelines require that all ZIP System® seam tape edges must be sealed and the tape must be centered within plus or minus 1/2" of all panel edge seam centers—with no wrinkles, “fish mouths” in the applied tape. For best results, the substrate must be clean and dry. Inside corners are especially difficult to tape properly. As a result, inside corner joints could be improperly installed, or sometimes “overlooked”, providing spaces where air and water can enter the wall system.



Proper taping is critical but can be difficult to achieve with the ZIP System®. Gaps, wrinkles, “fish mouths” and air bubbles create opportunities for water to enter the wall system. (Photo Source: Parksite)

**Improper panel spacing:** The ZIP System® installation manual requires a 1/8" gap between ZIP System® panels to allow for expansion and contraction. Not maintaining the 1/8" gap can stress the bond between the tape and the ZIP System® panel creating more opportunities for air infiltration, water intrusion and possible tape failure.

**Overdriven fasteners:** The ZIP System® installation manual requires 52 fasteners for each 4' x 8' piece of ZIP System® Wall Sheathing, each of which must puncture the WRB overlay without compromising it. Maintaining the required pneumatic pressure is critical to the proper installation of the ZIP System® panels. Over-driving of fasteners can puncture the weather barrier overlay around the fastener, creating additional opportunities for water intrusion.



Over-driven nails cause damage to the WRB overlay of the ZIP System®, creating opportunities for air and moisture to enter the wall system. (Photo Source: Parksite)

### CONCLUSION

DuPont™ Tyvek® weatherization products provide property owners and management groups with a system that is highly resistant to bulk water intrusion and air infiltration while allowing excellent wall system drying. The use of DuPont™ Tyvek® building wraps with today's wide array of cladding and sheathing options results in a more durable and forgiving wall system when compared to current WRB-laminated wood sheathing products such as ZIP Systems® wall sheathing and tape.

### FOR MORE INFORMATION

For more information, please call 1-800-44-Tyvek or visit [www.weatherization.tyvek.com](http://www.weatherization.tyvek.com)

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